

What is claimed is:

1. A hydrogen purge control apparatus comprising:
  - a fuel cell stack from which hydrogen is purged as necessary;
  - a purged hydrogen dilution device which is disposed downstream of the fuel cell stack, and which includes a chamber formed therein, a first inlet for allowing purged hydrogen to flow into the chamber, a second inlet for allowing air to flow into the chamber, and an outlet for discharging diluted hydrogen from the chamber;
  - a regulator which is disposed between the fuel cell stack and the first inlet, and which is provided for regulating an amount of the purged hydrogen flowing into the purged hydrogen dilution device;
  - a control unit which is operatively connected to the regulator; and
  - a hydrogen sensor which is provided at the outlet of the purged hydrogen dilution device so as to measure the hydrogen concentration at the outlet, and which is connected to the control unit,wherein the control unit is adapted to operate the regulator depending on the hydrogen concentration measured by the hydrogen sensor.
2. A hydrogen purge control apparatus according to claim 1, wherein the control unit is adapted to operate the regulator so as to reduce the amount of the purged hydrogen flowing into the purged hydrogen dilution device when the hydrogen concentration measured by the hydrogen sensor is equal to or greater than a predetermined value.
3. A hydrogen purge control apparatus according to claim 1, wherein the control

unit is adapted to operate the regulator so as to prohibit flow of the purged hydrogen into the purged hydrogen dilution device when the hydrogen concentration measured by the hydrogen sensor is equal to or greater than a predetermined value.

4. A hydrogen purge control apparatus according to claim 2, wherein the control unit is adapted to control power generation in the fuel cell stack, and is adapted to restrain the power generation when the amount of the purged hydrogen is reduced.

5. A hydrogen purge control apparatus according to claim 3, wherein the control unit is adapted to control power generation in the fuel cell stack, and is adapted to restrain the power generation when the flow of the purged hydrogen into the purged hydrogen dilution device is prohibited.

6. A hydrogen purge control apparatus comprising:

- a fuel cell stack from which hydrogen is purged as necessary;
- a purged hydrogen dilution device which is disposed downstream of the fuel cell stack, and which includes a chamber formed therein, a first inlet for allowing purged hydrogen to flow into the chamber, a second inlet for allowing air to flow into the chamber, and an outlet for discharging diluted hydrogen from the chamber;
- a regulator which is disposed between the fuel cell stack and the first inlet, and which is provided for regulating an amount of the purged hydrogen flowing into the purged hydrogen dilution device; and
- a control unit which is operatively connected to the regulator, and which includes a hydrogen concentration estimating section that is configured to estimate the hydrogen concentration at the outlet of the purged hydrogen dilution device based on an

operating state of the fuel cell stack,

wherein the control unit is adapted to operate the regulator depending on the hydrogen concentration estimated by the hydrogen concentration estimating section.

7. A hydrogen purge control apparatus according to claim 6, wherein the control unit is adapted to operate the regulator so as to reduce the amount of the purged hydrogen flowing into the purged hydrogen dilution device when the hydrogen concentration estimated by the hydrogen concentration estimating section is equal to or greater than a predetermined value.

8. A hydrogen purge control apparatus according to claim 6, wherein the control unit is adapted to operate the regulator so as to prohibit flow of the purged hydrogen into the purged hydrogen dilution device when the hydrogen concentration estimated by the hydrogen concentration estimating section is equal to or greater than a predetermined value.

9. A hydrogen purge control apparatus according to claim 7, wherein the control unit is adapted to control power generation in the fuel cell stack, and is adapted to restrain power generation in the fuel cell stack when the amount of the purged hydrogen is reduced.

10. A hydrogen purge control apparatus according to claim 8, wherein the control is adapted to control power generation in the fuel cell stack, and is adapted to restrain power generation in the fuel cell stack when the flow of the purged hydrogen is prohibited.

11. A hydrogen purge control apparatus comprising:
- a fuel cell stack from which hydrogen is purged as necessary;
  - a purged hydrogen dilution device which is disposed downstream of the fuel cell stack, and which includes a chamber formed therein, a first inlet for allowing purged hydrogen to flow into the chamber, a second inlet for allowing air to flow into the chamber, and an outlet for discharging diluted hydrogen from the chamber;
  - a regulator which is disposed between the fuel cell stack and the first inlet, and which is provided for regulating an amount of the purged hydrogen flowing into the purged hydrogen dilution device; and
  - a control unit which is operatively connected to the regulator, and which includes a hydrogen concentration estimating section that is configured to estimate the hydrogen concentration at the outlet of the purged hydrogen dilution device in such a manner that the hydrogen concentration at the outlet is assumed to increase depending on the amount of the purged hydrogen when a hydrogen purging operation is executed, and to decrease in accordance with a predetermined time constant when a hydrogen purging operation is not executed,
- wherein the control unit is adapted to operate the regulator depending on the hydrogen concentration estimated by the hydrogen concentration estimating section.
12. A hydrogen purge control apparatus according to claim 11, wherein the control unit is adapted to operate the regulator so as to reduce the amount of the purged hydrogen flowing into the purged hydrogen dilution device when the hydrogen concentration estimated by the hydrogen concentration estimating section is equal to or greater than a predetermined value.

13. A hydrogen purge control apparatus according to claim 11, wherein the control unit is adapted to operate the regulator so as to prohibit flow of the purged hydrogen into the purged hydrogen dilution device when the hydrogen concentration estimated by the hydrogen concentration estimating section is equal to or greater than a predetermined value.

14. A hydrogen purge control apparatus according to claim 12, wherein the control unit is adapted to control power generation in the fuel cell stack, and is adapted to restrain power generation in the fuel cell stack when the amount of the purged hydrogen is reduced.

15. A hydrogen purge control apparatus according to claim 13, wherein the control is adapted to control power generation in the fuel cell stack, and is adapted to restrain power generation in the fuel cell stack when the flow of the purged hydrogen is prohibited.